

### **ABSTRACT**

In one embodiment, this invention relates to an aqueous acid iron phosphorus bath which comprises

(A) at least one compound from which iron can be electrolytically deposited,

(B) hypophosphite ion, and

(C) a sulfur-containing compound selected from sulfoalkylated polyethylene imines, sulfonated safranin dye, and mercapto aliphatic sulfonic acids or alkali metal salts thereof.

Optionally, the aqueous acidic iron phosphorus electroplating bath of the invention also may comprise aluminum irons. The alloys which are deposited on the substrates by the process of the present invention are characterized by the presence of iron, phosphorus and sulfur.